This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) An Exhaust Gas Recirculation (EGR) system providing a mixture of exhaust gas and intake air to the intake of an internal combustion engine, the system comprising:

a turbocharger including a compressor with more than one stage, wherein intake air is compressed in at least one first stage of the compressor, and a mixture of the compressed intake air ~~compressed in the at least one first stage of the compressor~~ and exhaust gas, which exhaust gas has not passed through a turbine, is compressed in at least one second stage of the compressor;

a diesel particulate filter disposed to filter the exhaust gas; and

an EGR cooler disposed to receive filtered exhaust gas from the diesel particulate filter before the filtered exhaust gas enters the compressor.

2. (canceled)

3. (previously presented) The EGR system of claim 1 wherein the compressor has two stages.

4. (previously presented) The EGR system of claim 1 wherein the turbocharger is a variable geometry turbocharger.

5. (previously presented) The EGR system of claim 1 further comprising a control valve which determines the proportion of exhaust gas produced by the engine to be recirculated.

6. (previously presented) The EGR system of claim 1 further comprising an EGR mixer to mix the exhaust gas with intake air to form the mixture.

7. (original) The EGR system of claim 6 wherein the intake air is compressed by at least one first stage of the turbocharger to achieve a first intermediate pressure, the first intermediate pressure being less than an intake pressure at an intake manifold of the engine, and wherein back pressure from a turbocharger turbine maintains a pressure of the exhaust gas at a second intermediate pressure, the second intermediate pressure being less than an intake pressure at an intake manifold of the engine.

8. (previously presented) The EGR system of claim 1 wherein the turbocharger comprises:

a turbine inlet receiving exhaust gas from an exhaust manifold of an internal combustion engine and a turbine exhaust outlet, and a compressor having an air inlet and a first volute;

a turbine wheel extracting energy from the exhaust gas, said turbine wheel connected to a shaft;

a bearing supporting the shaft for rotational motion; and

a compressor impeller connected to the shaft opposite the turbine wheel, said compressor impeller having a first plurality of impeller blades mounted on a front face proximate the air inlet, said first plurality of blades increasing the velocity of air from the air inlet and exhausting air into the first volute, said compressor impeller also having a second plurality of impeller blades mounted on a back face, said second plurality of blades increasing the velocity of air from a scroll inlet connected to the first volute and a source of exhaust gas, and exhausting the mixture of exhaust gas and air into a second volute having a charge air outlet connected to the engine intake.

9. (original) The EGR system of claim 8 wherein the second plurality of impeller blades compresses the mixture to a pressure required by the engine to transit a desired mass flow.

10. (canceled)

11. (previously presented) The EGR system of claim 1 further comprising at least one air/air charge cooler disposed to receive the mixture of intake air and exhaust after it is compressed in the second stage of the compressor.

12. (previously presented) The EGR system of claim 1 further comprising at least one emissions control device.

13. (currently amended) An EGR system for an internal combustion engine wherein a turbocharger maintains a pressure of cooled exhaust gas which has been previously filtered at an intermediate pressure lower than a pressure at an intake manifold of the engine, wherein said intermediate pressure is greater than a pressure of intake air, the intake air having been compressed by a first stage of a two stage compressor before being mixed with the filtered exhaust gas.

14. (original) The EGR system of claim 13 wherein the compressor forms a part of a turbocharger.

15. (original) The EGR system of claim 14 wherein the exhaust gas and the intake air are mixed together to form a mixture, and the mixture is further compressed by a second stage of the two stage compressor until the mixture reaches a pressure sufficient to meet a mass flow demand of the engine.

16. (currently amended) A method of providing exhaust gas recirculation to an internal combustion engine comprising the steps of:

maintaining a pressure of cooled exhaust gas produced by the engine, which gas has been previously filtered and which has not passed through a turbine at a first intermediate pressure less than a pressure at an intake manifold of the engine;

increasing a pressure of intake air to a second intermediate pressure;

mixing the exhaust gas and pressurized intake air to form a mixture; and

boosting the pressure of the mixture to a pressure sufficient to meet a mass flow demand of the engine.

17. (original) The method of claim 16 wherein the maintaining step comprises using back pressure from a turbocharger turbine.

18. (canceled)

19. (original) The method of claim 16 wherein the increasing step comprises compressing the intake air with a first stage of a two stage compressor.

20. (previously presented) The method of claim 16 wherein the boosting step comprises compressing the mixture using the second stage of a two stage compressor of a turbocharger, wherein the turbocharger comprises:

turbine inlet receiving exhaust gas from an exhaust manifold of an internal combustion engine and a turbine exhaust outlet, and a compressor having an air inlet and a first volute;

a turbine wheel extracting energy from the exhaust gas, said turbine wheel connected to a shaft;

a bearing supporting the shaft for rotational motion;

a compressor impeller connected to the shaft opposite the turbine wheel, said compressor impeller having a first plurality of impeller blades mounted on a front face proximate the air inlet, said first plurality of blades increasing the velocity of air from the air inlet and exhausting air into the first volute, said compressor impeller also having a second plurality of impeller blades mounted on a back face, said second plurality of blades increasing the velocity of air from a scroll inlet connected to the first volute and a source of exhaust gas, and exhausting the mixture of exhaust gas and air into a second volute having a charge air outlet connected to the engine intake.